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STUDY PLAN

MARINE POWER & EQUIPMENT BIOMONITORING

ENVIRONMENTAL SERVICES DIVISION  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
1200 SIXTH AVENUE  
SEATTLE WASHINGTON 98101

USEPA SF



1345237

PROJECT NAME: MARINE POWER & EQUIPMENT BIOMONITORING

PROJECT MANAGER: Michael F. Matta

FIELD OPERATIONS: Michael F. Matta Michael Watson

QA OFFICE CONCURRENCE: Ray R. Jones

DATE: 2/2/87 *concurrent method*

ESD PEER REVIEW:

DATE:

PROJECT NUMBER: TEC-222C

ACCOUNT NUMBER: AFEB3A

LABORATORY DESIGNATED: ✓ EPA CLP PRIVATE

SAMPLE NUMBERS ASSIGNED: from 87060040 to 87060049

SAMPLE SCHEDULE AND MILESTONES:

ACTIVITY	DATE
Field Sampling	2/4 to 2/6, 1987
Sample Analysis	2/20/87
Data Report	2/27/87

SAMPLE MANAGEMENT OFFICE REVIEW: Joyce M. Cusack

DATE: 2-4-87

PROJECT DESCRIPTION AND SITE LOCATION:

There are two sites of concern in this investigation: the Duwamish river MP&E facility, and the MP&E facility on the north shore of Lake Union. Both of these sites are ship repair facilities and the areas adjacent to these facilities have been found to contain sandblasting debris under water in significant amounts as a result of the type of work occurring there. The objective of this survey is to collect sediment samples for chemical and biological analysis to determine the amount and extent of any toxicity present in bottom sediments as a result of the dumping of sandblasting debris near these facilities.

PROJECT MEASUREMENT OBJECTIVES:

To determine the amount and extent of toxicity in sediments adjacent to the two MP&E facilities.

SAMPLE RATIONALE AND NETWORK DERIVATION:

The sample areas were selected as indicated in figures 1 and 2 because of their proximity to areas where sandblasting debris was found on a previous survey.

ANALYTICAL DATA:

# OF SAMPLES	PARAMETER	QA SAMPLES	MATRIX	CONTAINER	HOLDING TIME	PRESERVATION
6	BIOASSAY*	1	SEDIMENT	1 Gal.glass	2days	ice
6	METALS†	1	SEDIMENT	8 Oz. glass	2weeks	ice

\* Bioassays include Hyalella and Daphnia for fresh water and Rhepoxinius for fresh water. These are 10-Day bioassays.

†- As, Cd, Cr, Cu, Fe, Pb, Hg, Sn, Zn

DATA QUALITY OBJECTIVES:

PARAMETER	METHOD	DETECTION LIMITS	PRECISION	ACCURACY	COMPLETENESS
BIOASSAY	EPA Method	PER METH	PER METHOD	95%	95%
METALS	EPA Method	PER METH	PER METHOD	95%	95%
	*	*	*	*	*
	*	*	*	*	*
	*	*	*	*	*
	*	*	*	*	*

SAMPLING PROCEDURES TO BE USED:

A large number of samples will be collected from each sampling area and then composited into a single sample which would represent the area. Each individual grab sample will be combined in a pre-cleaned stainless steel bucket and stirred with a cleaned stainless steel spoon until the sample is homogenous. This homogenate will then be split three ways: One aliquot for bioassays, one for total metals analysis, and one for organotin analysis.

SAMPLE CUSTODY AND DOCUMENTATION:

Samples will be in the custody of EPA personnel. Region 10 Chain of Custody procedures and forms will be used. Custody seals will be placed on all shipping containers.

CALIBRATION PROCEDURES AND FREQUENCY:

No field analytical equipment will be used. However, laboratory calibration procedures described in the Regional Laboratory, standard operative protocols

LABORATORY DATA REDUCTION/QA REVIEW:

The Regional laboratory will have total responsibility for data generation and reporting. This will include examination of raw data. Data will be put into the laboratory Data Management System.

FIELD DATA REDUCTION/QA REVIEW:

Field notes, photos, and field sample data sheets will be used to document survey sample activities.

REPORTS (AS REQUIRED):

ESD will generate a data and sampling report from the analytical results.

SYSTEM AND PERFORMANCE AUDITS:

None requested.

SCHEDULED:

CONDUCTED:

QA REPORT TO MANAGEMENT:

None requested.

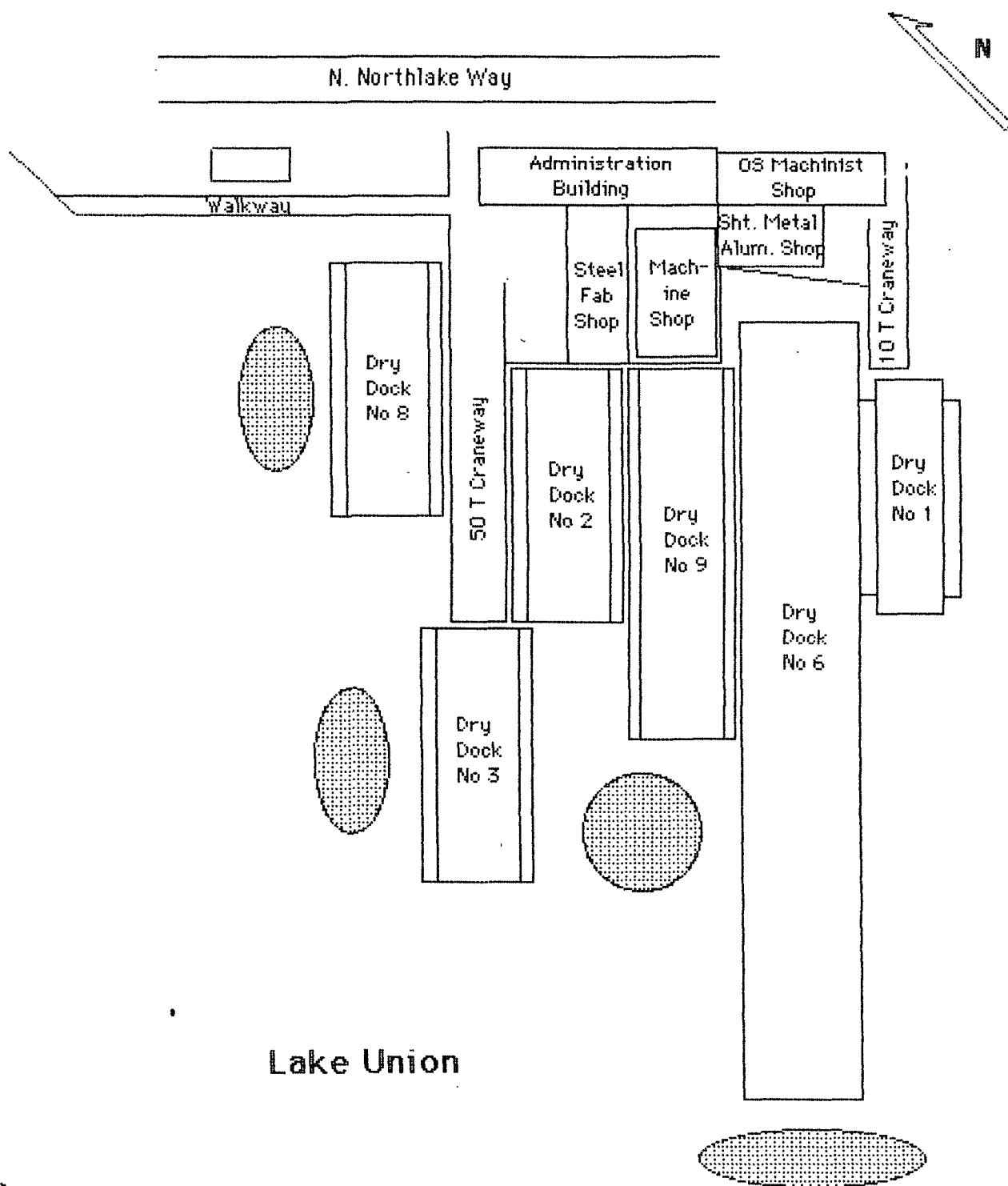
SAFETY:

Steel-toe boots, gloves and life vests will be worn by personnel handling the dredge and collecting samples. No acute toxic respiratory exposure exists for sampling activities, so no respiratory protection is necessary.

# MARINE POWER & EQUIPMENT COMPANY

1441 North Northlake Way, Seattle, Washington

February 4-6, 1987



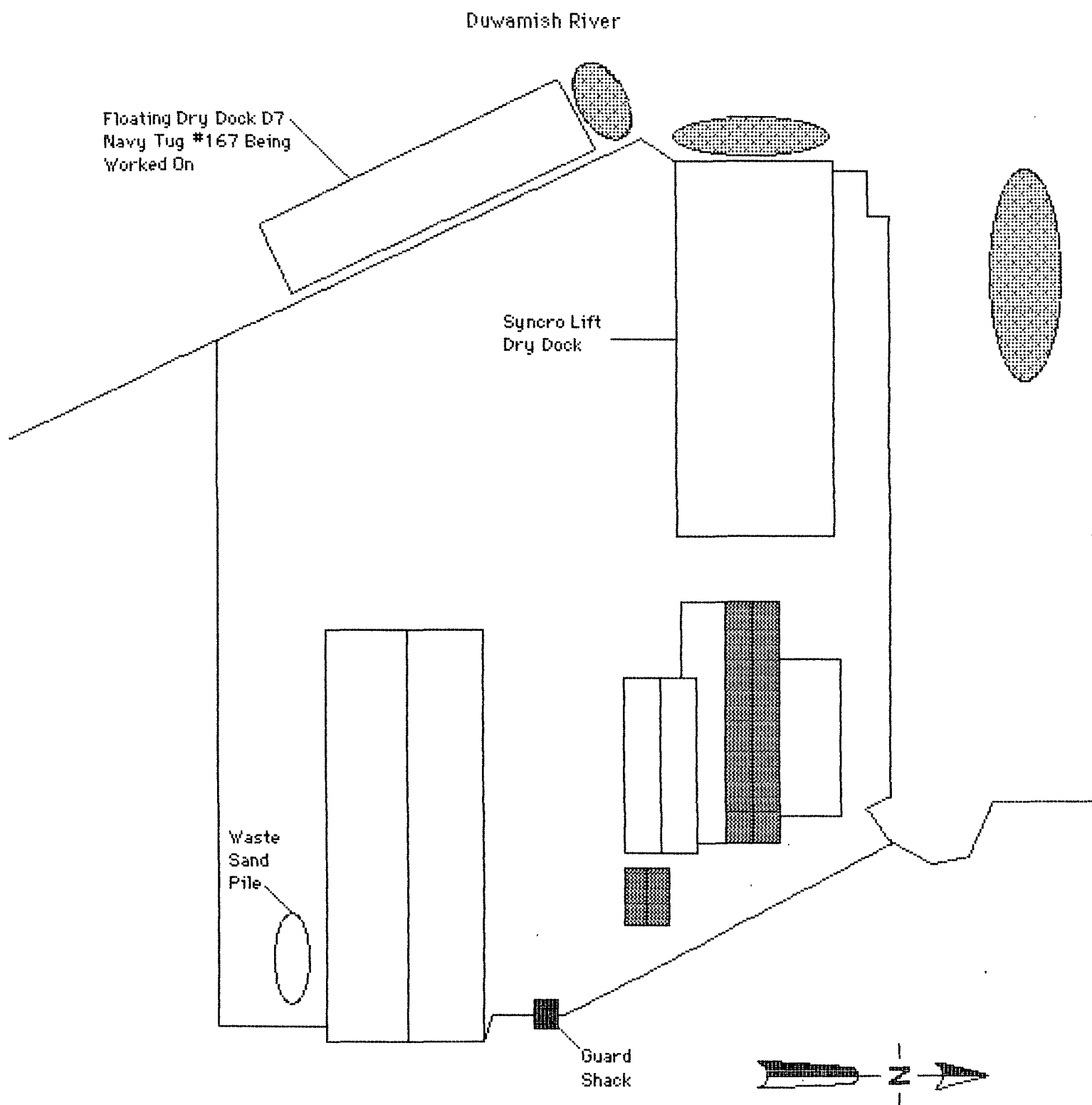
— Sampling areas

Scale Is Estimated

# MARINE POWER & EQUIPMENT COMPANY

6701 Fox Ave. S., Seattle, Washington

February 4-6, 1987

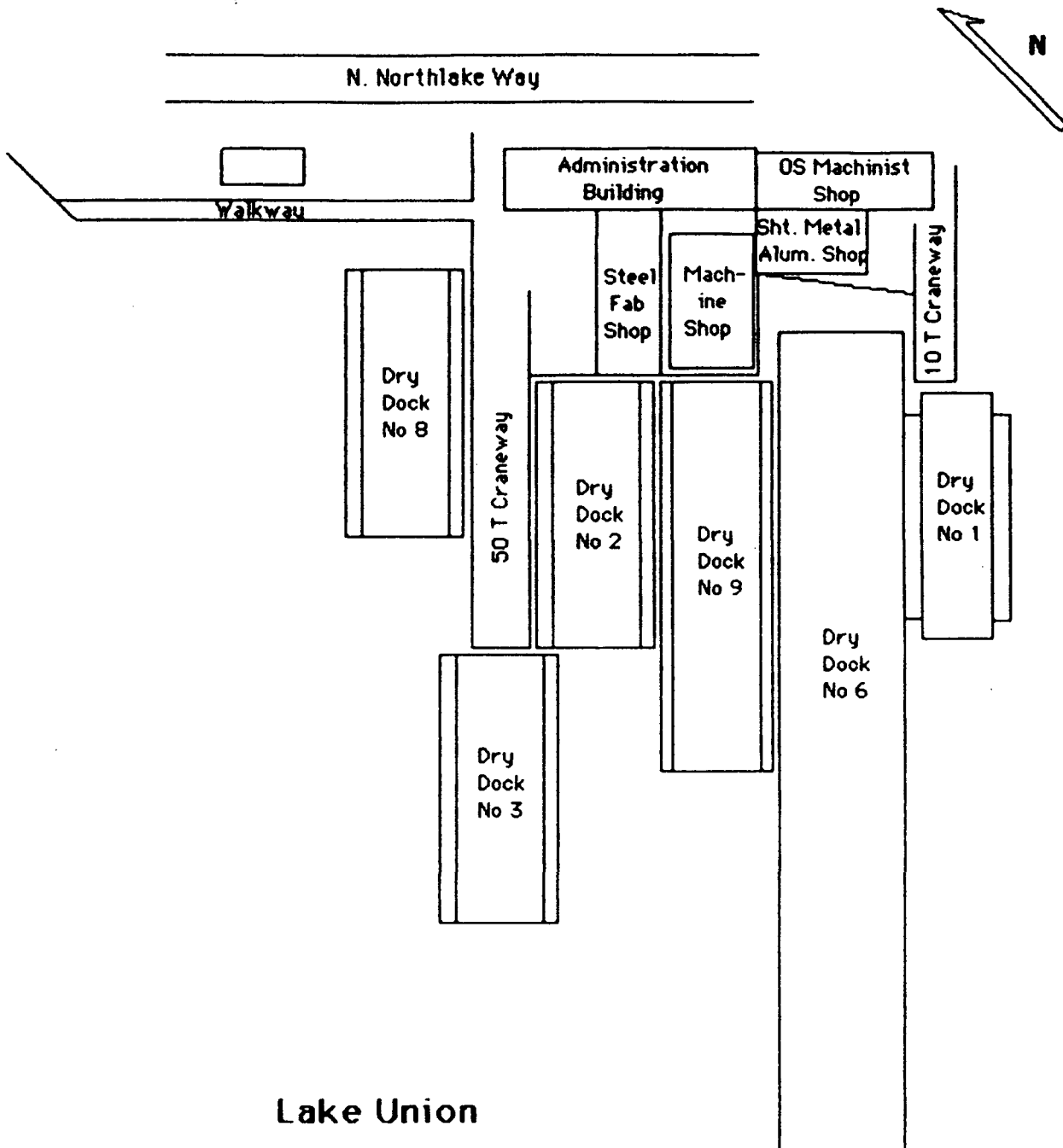


— Sampling areas  
Scale Is Estimated

# MARINE POWER & EQUIPMENT COMPANY

1441 North Northlake Way, Seattle, Washington

February 26, 1985



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# MARINE POWER & EQUIPMENT COMPANY

6701 Fox Ave. S., Seattle, Washington

February 25-26, 1985

Duwamish River

Floating Dry Dock D7  
Navy Tug #167 Being  
Worked On

Syncro Lift  
Dry Dock

Waste  
Sand  
Pile

Guard  
Shack

25 FEB

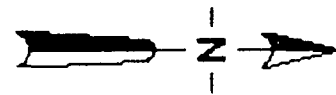
DIVE 1

25 FEB

DIVE 3

26 FEB

DIVE 5



## Dive Locations

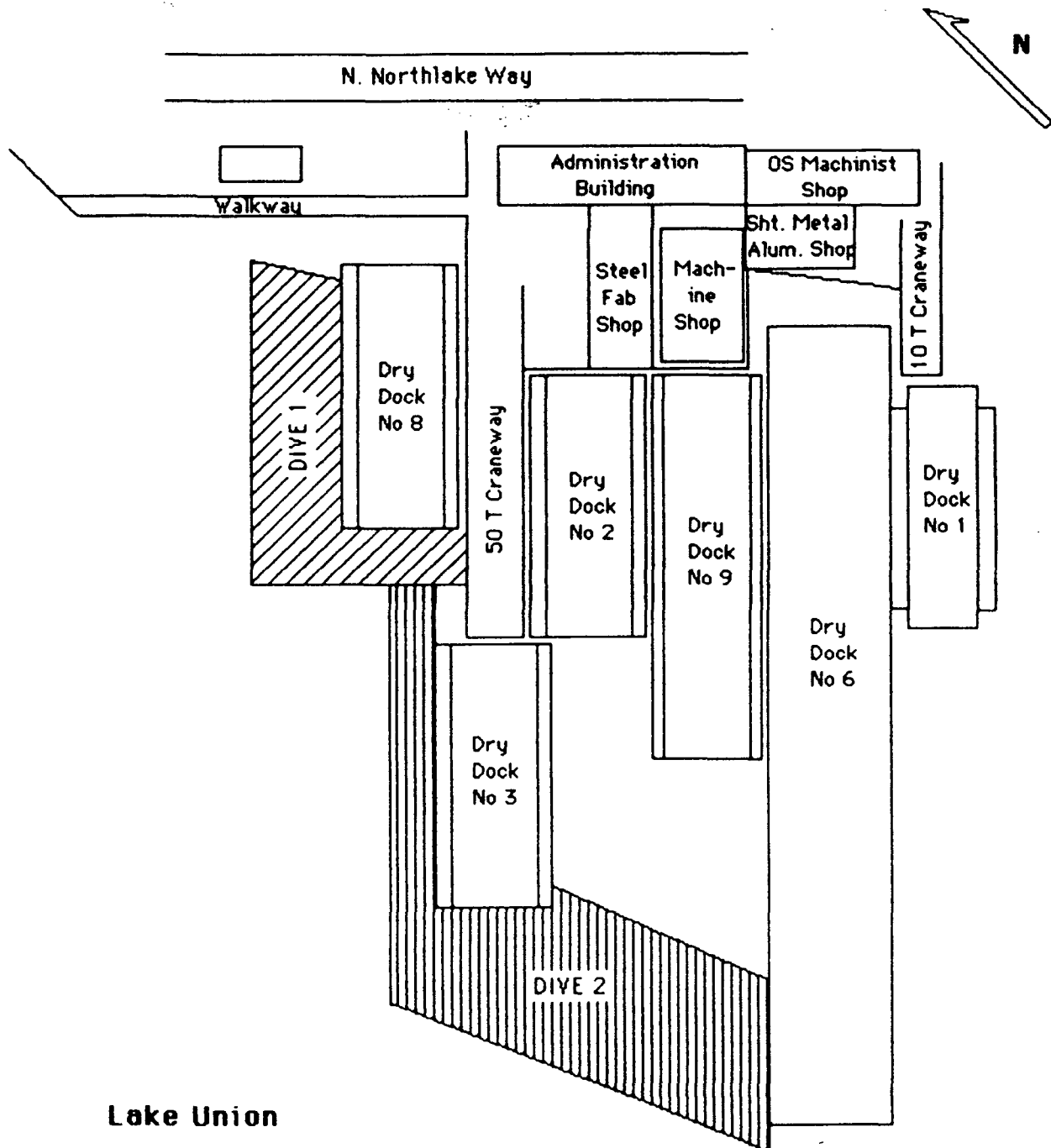
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# MARINE POWER & EQUIPMENT COMPANY

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February 27, 1985



## Dive Locations

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**MARINE POWER & EQUIPMENT COMPANY**

6701 FOX AVE. S., SEATTLE, WASHINGTON

FEBRUARY 25-26, 1985

EPA Lab Number	Date	Time	Description
<b><u>Facility samples</u></b>			
094001	850225		Soil blank
094002	850225	1016	Syncro lift drydock, south side at winch B2
094003	850225	1019	Syncro lift drydock, north side at winch B2
094004	850225	1027	Syncro lift drydock, north side near winch B2
094005	850225	1031	Syncro lift drydock, north side near winch B5
094006	850225	1037	Syncro lift drydock, south side, winch B5
094007	850225	1042	Syncro lift drydock, south side, winch B7
094008	850225	1048	Syncro lift drydock, north side near winch B8
094009	850225	1118	Drydock #D7, frame 4
094010	850225	1126	Drydock #D7, frame 13
094011	850225	1132	Dry dock #D7, frame 18, under hull of Naval vessel #167
094012	850225	1145	Dry dock #D7, frame 24, north of stern of Naval vessel #167
094013	850225	1218	Dry dock #D7, frame 19, north end near stern of Naval vessel #167 (water sample)
094014	850225	1255	Pile of waste blasting sand, south side of property
094015	850225	1304	Pile of waste blasting sand, south side of property
094016	850225	1308	Pile of waste blasting sand, south side of property
094021	850225		Transport water blank
094022	850225		Transfer water blank
<b><u>Dive samples</u></b>			
094101	850225	1205	Syncro lift drydock, end, right side
094102	850225	1220	Syncro lift drydock, end, center
094103	850225	1230	Syncro lift drydock, end, left
094104	850225	1354	Syncro lift drydock, 4th girder in, center
094105	850225	1350	Syncro lift drydock, 4th girder in, right
094106	850225	1345	Syncro lift drydock, 4th girder in, left
094107	850225	1530	Syncro lift drydock, 6th girder in, 15' from left
094108	850225	1717	Midway under barge 263
094109	850225	1524	Syncro lift drydock, 6th girder in, left
094110	850225	1710	Face of pier midway on barge
094111	850225	1723	Far end of syncro lift drydock, adj. end of barge
094117	850226	1226	Pier face near ladder
094118	850226	1236	Off pier face under barge
094120	850226	1255	Pier face near ladder

# MARINE POWER & EQUIPMENT COMPANY

6701 FOX AVE. S., SEATTLE, WASHINGTON

FEBRUARY 25-26, 1985

EPA Lab Number	Date	Time	Description
<b><u>VanVeen dredge samples</u></b>			
094112	850225	1820	End of white building off pier
094113	850225	1820	Off pier even with private boat shelter
094114	850225	1839	Corner MPE pier 50' from pier
094115	850226	1120	Downstream of drydock wash
094116	850226	1135	Upstream of drydock wash
094121	850226	1355	Northwest dolphin off syncro lift drydock
094122	850226	1403	Off boat ramp east of bridge piling
094123	850226	1408	Under bridge north of northern bridge house
094124	850226	1416	Under bridge center span
094125	850226	1429	Mid channel off southeast property boundary
094126	850226	1437	Mid channel off Seafreeze dock
094127	850226	1443	Mid channel downstream in curve
094128	850226	1456	Mid channel upstream near small boat dock

# MARINE POWER & EQUIPMENT COMPANY

1441 North Northlake Way, SEATTLE, WASHINGTON

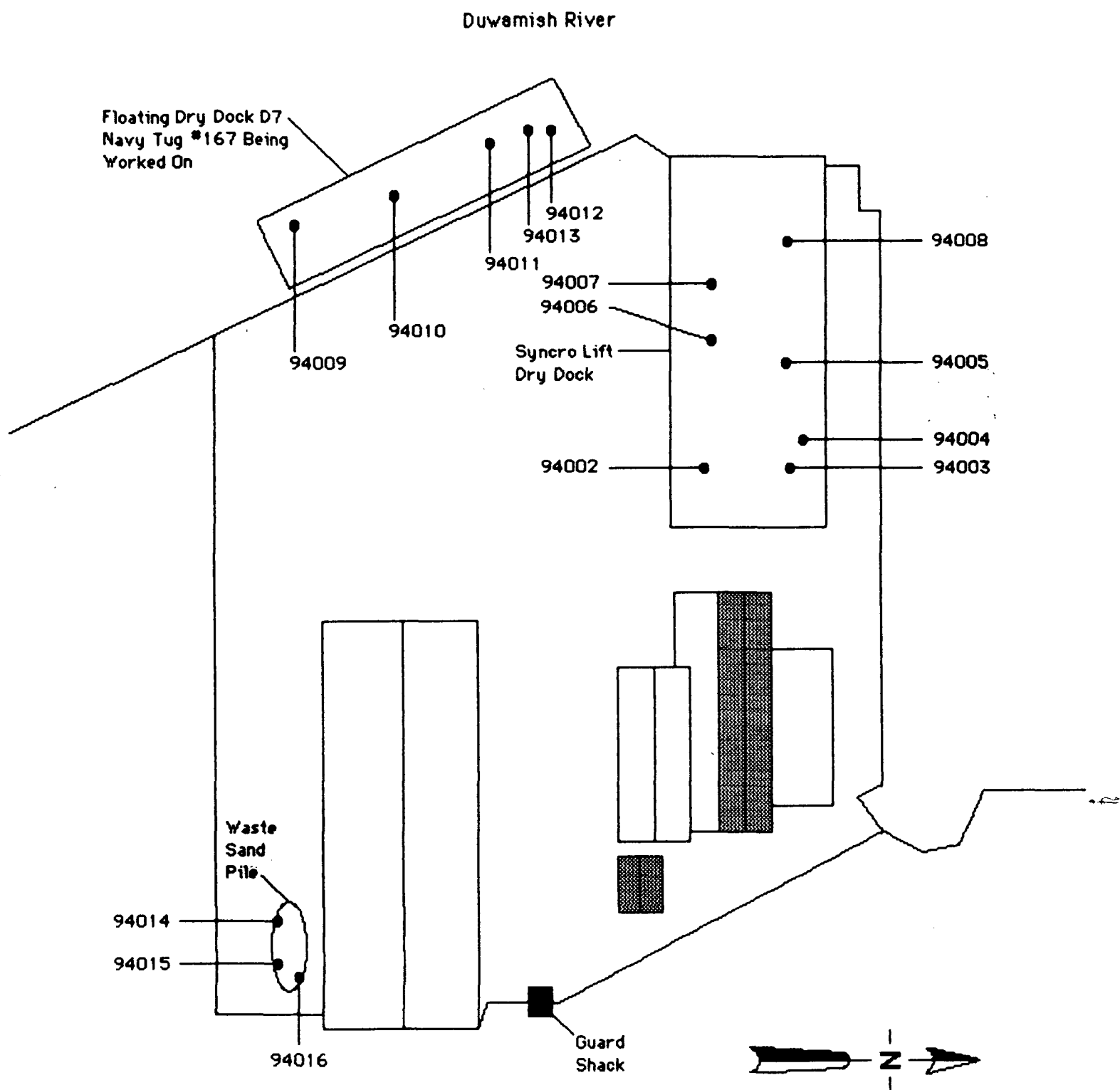
FEBRUARY 26 - March 1, 1985

EPA Lab Number	Date	Time	Description
<b><u>Facility samples</u></b>			
094050	850226	1503	Drydock 1, south end, middle
094051	850226	1509	Drydock 1, north end, middle
094052	850226	1520	Drydock 6, frame 20 middle
094053	850226	1525	Drydock 5, frame 34, south end, east side
094054	850226	1530	Drydock 6, frame 26, middle, under vessel "Bieml/Trader"
094055	850226	1535	Drydock 6, frame 12, west side
094056	850226	1547	Drydock 9, south end, middle
094057	850226	1553	Drydock 9, middle, west side
094058	850226	1600	Drydock 2, south end, east side
094059	850226	1606	Drydock 2, north end, west side
094060	850226	1613	Drydock 3, north end, middle, under vessel
094061	850226	1618	Drydock 3, middle, west side
094062	850226	1630	Drydock 8, middle, middle
094063	850226	1635	Drydock 8, middle, eastside at drain
094064	850226		Soil blank
<b><u>Dive samples</u></b>			
094129	850227	1037	Drydock 8, northwest side
094130	850227	1055	Drydock 8, northwest side
094131	850227	1100	Drydock 8, northwest side
094132	850227	1106	Drydock 8, corner near pier
094133	850227	1238	Near craneway
094134	850227	1245	Northwest of drydock 3
094135	850227	1300	Between drydock 3 and drydock 6
094136	850227	1420	Front of drydock 9
094137	850227	1425	Front of drydock 6
<b><u>VanYeen dredge samples</u></b>			
094150	850301	1258	South off Tilliou Marina
094151	850301	1311	~30 feet off drydock 3
094152	850301	1328	~200 feet off drydock 3
094153	850301	1346	Off drydock 2 ~40 feet south of drydock 6
094154	850301	1407	~100 feet off drydock 6
094155	850301	1422	Mid channel off drydock 6
094156	850301	1455	~100 feet west of drydock 3
094157	850301		Sediment blank

# MARINE POWER & EQUIPMENT COMPANY

6701 Fox Ave. S., Seattle, Washington

February 25, 1985



**Figure 1 Sample Locations**

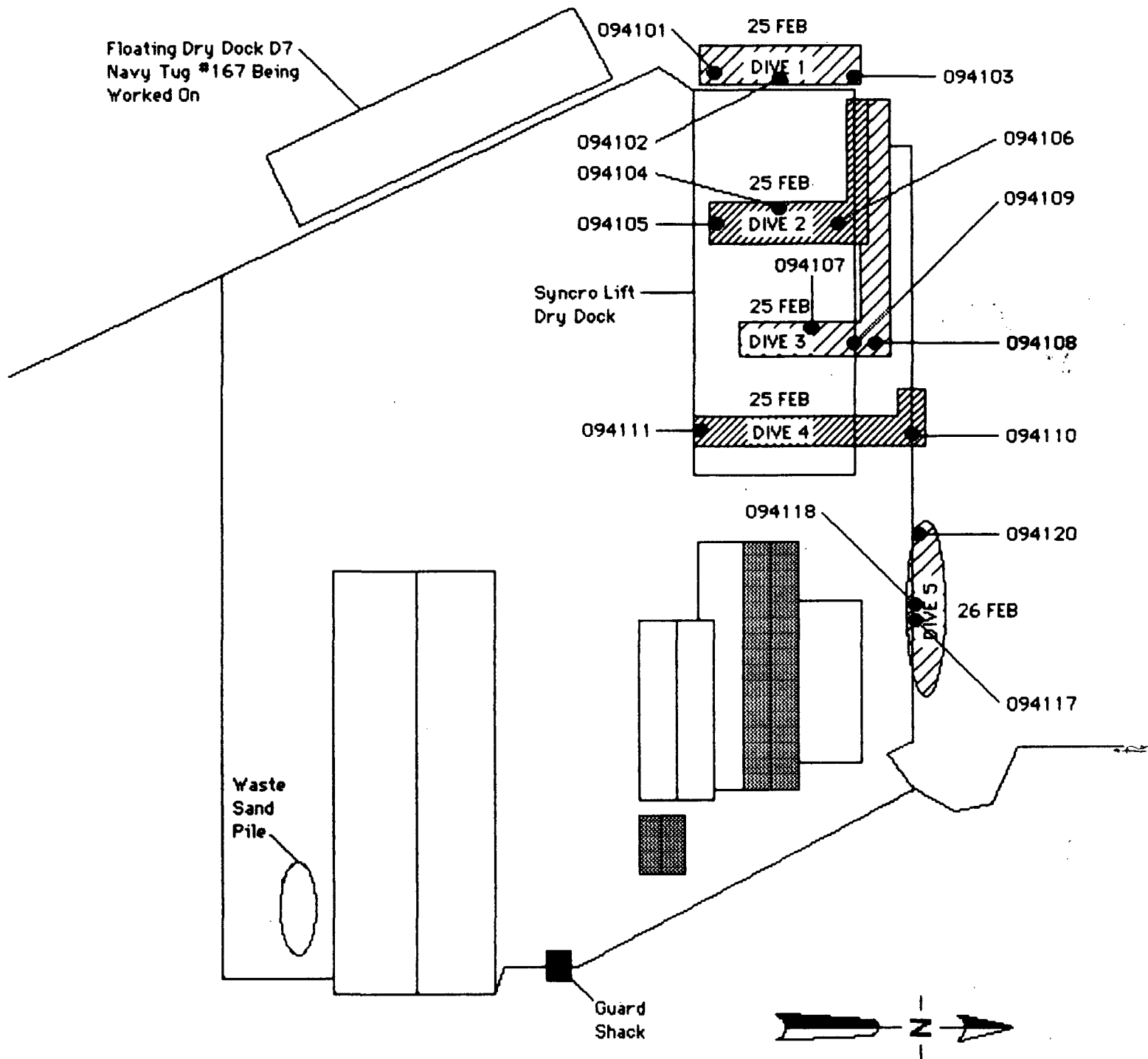
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# MARINE POWER & EQUIPMENT COMPANY

6701 Fox Ave. S., Seattle, Washington

February 25-26, 1985

Duwamish River



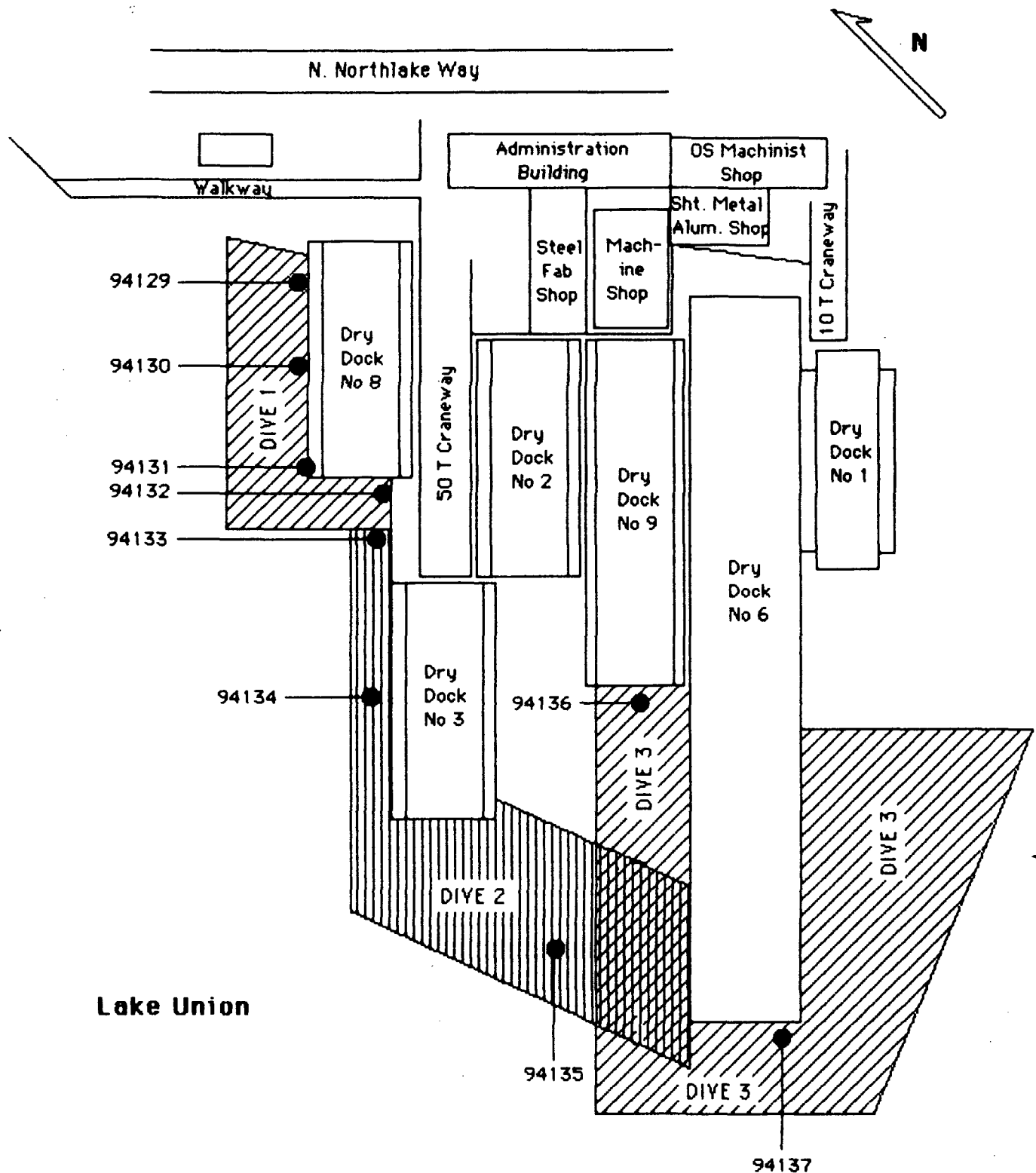
**Figure 2 Dive & Sample Locations**

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# MARINE POWER & EQUIPMENT COMPANY

1441 North Northlake Way, Seattle, Washington

February 27, 1985



**Figure 5 Dive & Sample Locations**

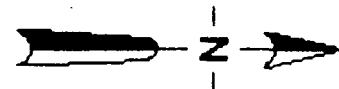
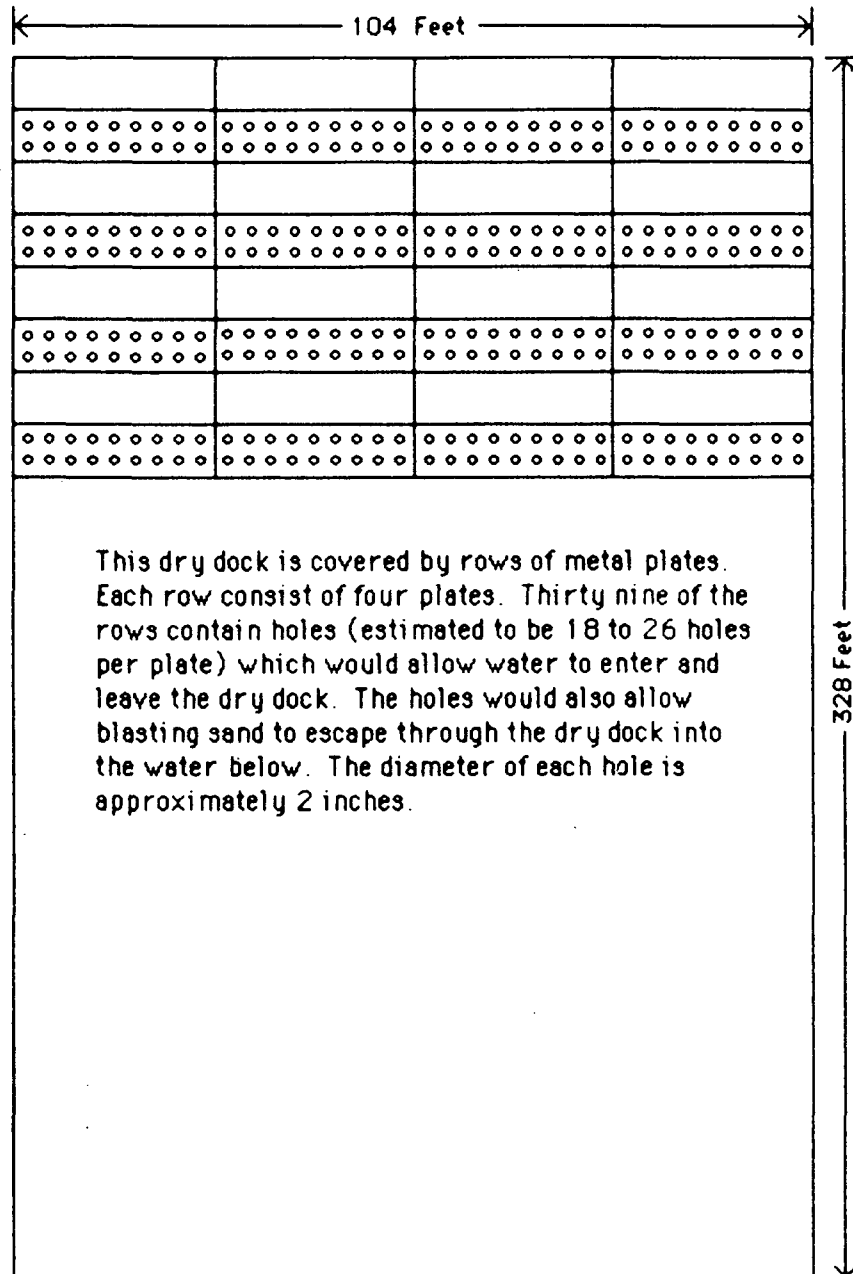
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# MARINE POWER & EQUIPMENT COMPANY

6701 Fox Ave. S., Seattle, Washington

February 25, 1985

Duwamish River



**Figure 7 Syncro Lift Dry Dock**

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